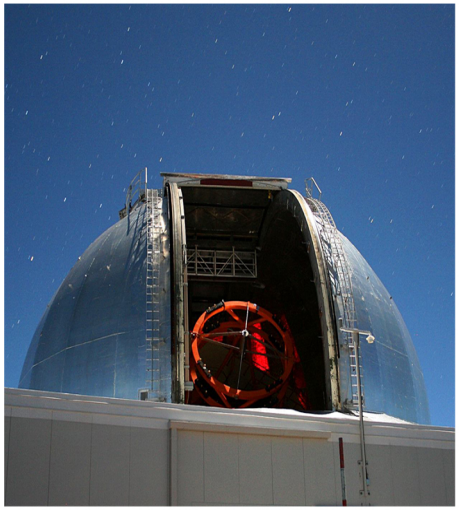
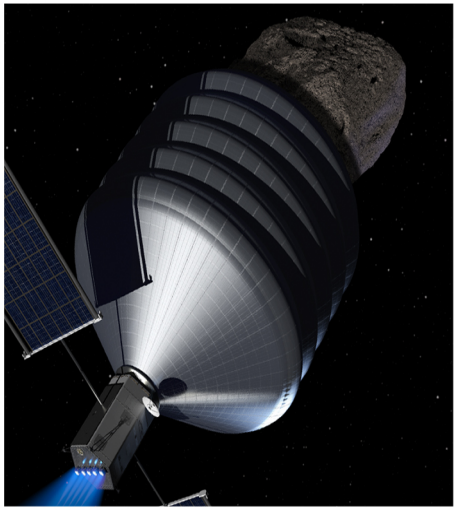
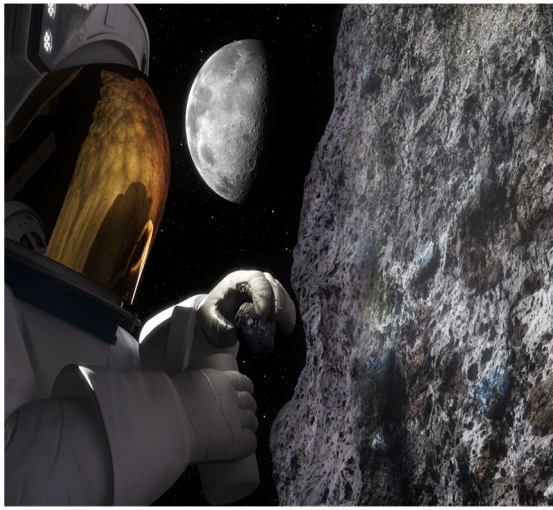
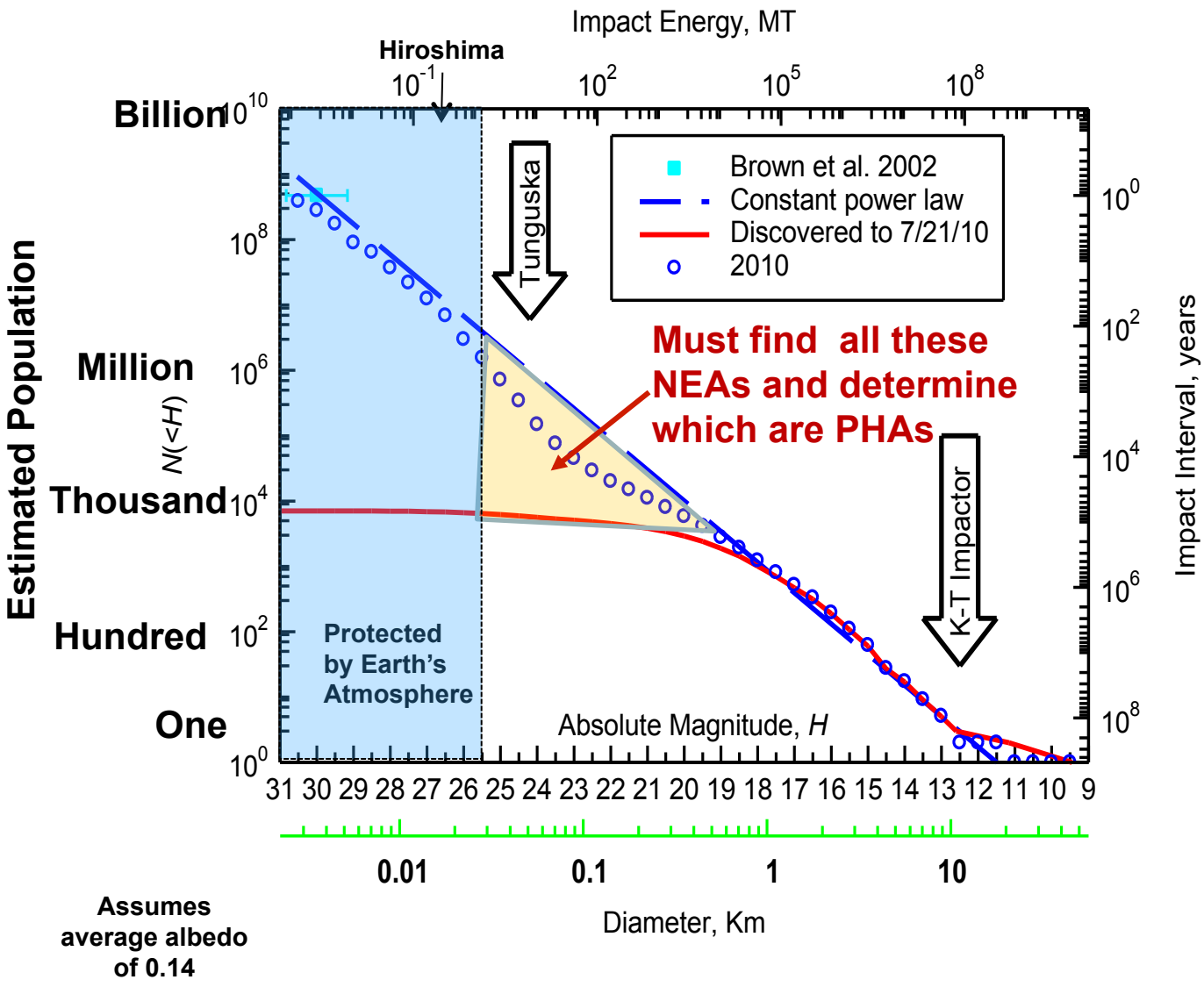
The Asteroid Grand Challenge

Global Problem, Global Interest, Global Solutions

W. James Adams
NASA Deputy Chief Technologist
Washington, DC

NEAs, PHAs and the Impact Hazard



NEAs – Near Earth Asteroids that come within 30million miles of Earth's orbit

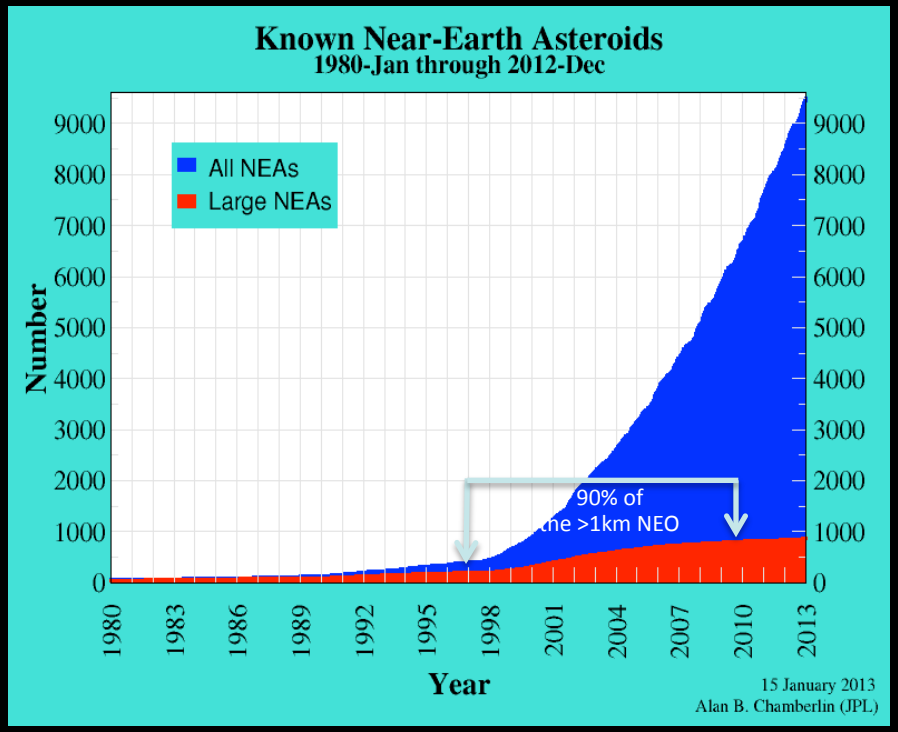
PHAs – Potentially Hazardous NEAs larger than 30 meters in size that could someday impact Earth

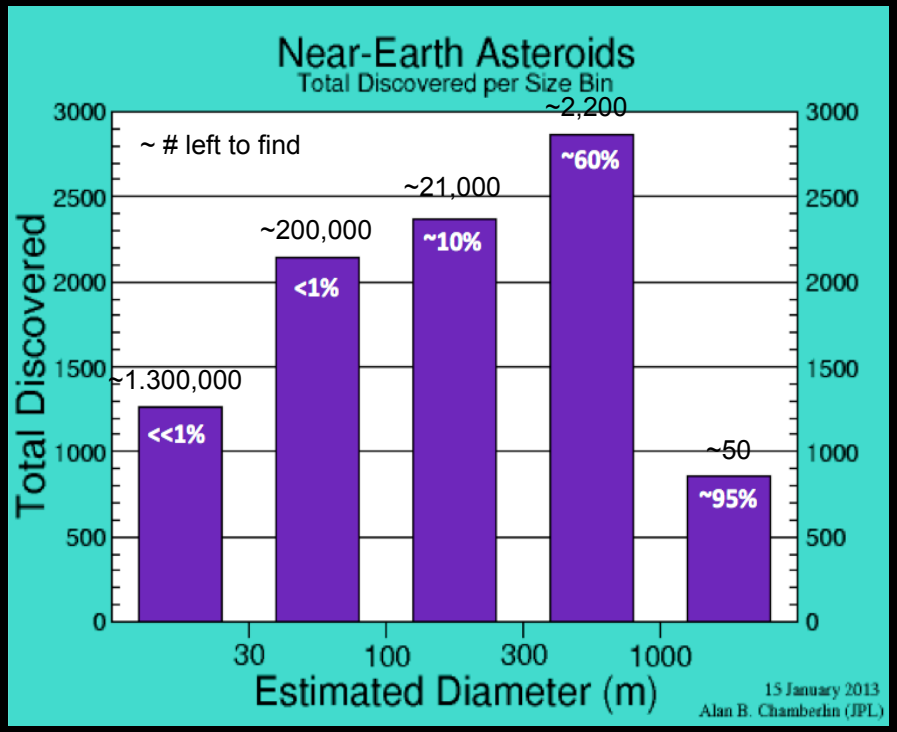
PHAs have been about 15% of all NEAs found to date

NEAs must be tracked for several weeks to determine if they are PHAs

Known PHAs come between the Earth and the Moon about once a month!

Finding NEO's





- Congressional Bill 1998 – Find 90% of the >1km NEO within 10 yrs
- Congressional Bill 2005 – Find 90% of the >140m NEO within 15 yrs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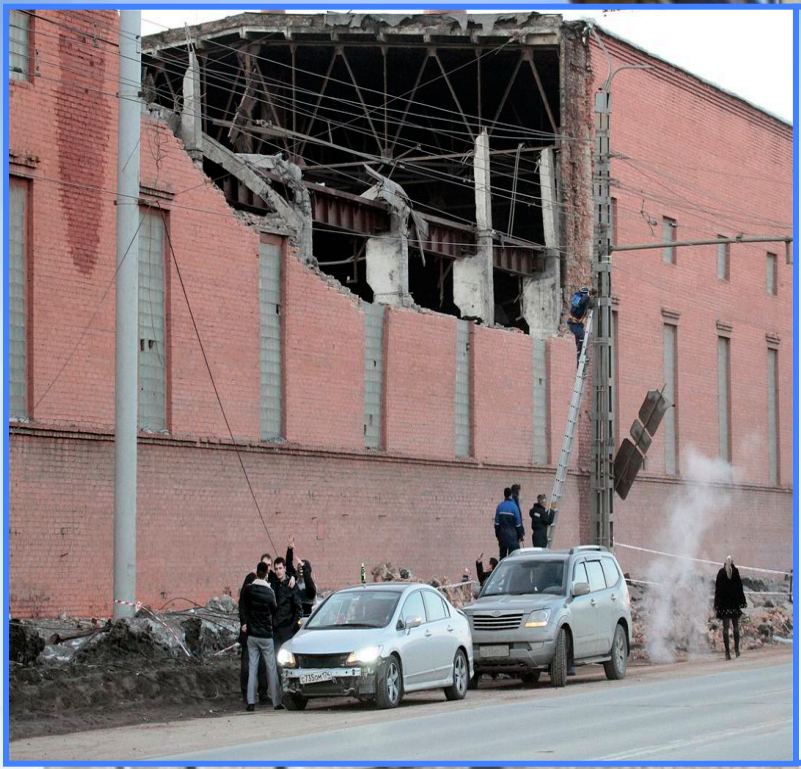
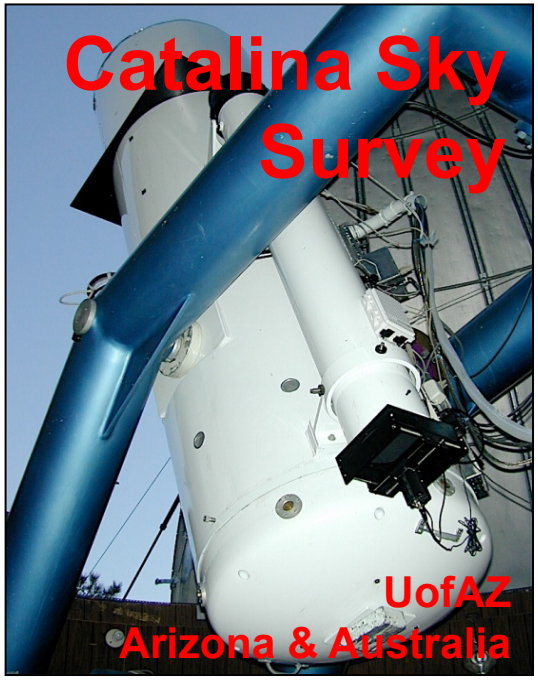


Grand Challenge Engagement Channels/ Stakeholders

- Public
  - Advocacy Groups
  - Media
  - Amateur Astronomers
  - DIYers
  - Future Scientists (K-12)
- International Science and Tech Community
  - UN COPUOS
  - Governments
  - Space Agencies
  - Astronomical Societies
- NASA Internal
- Partners
  - Existing Near Earth Object Program Network
  - Academia
  - New Ventures
  - Traditional Industry
- Legislative
- Other Government Agencies

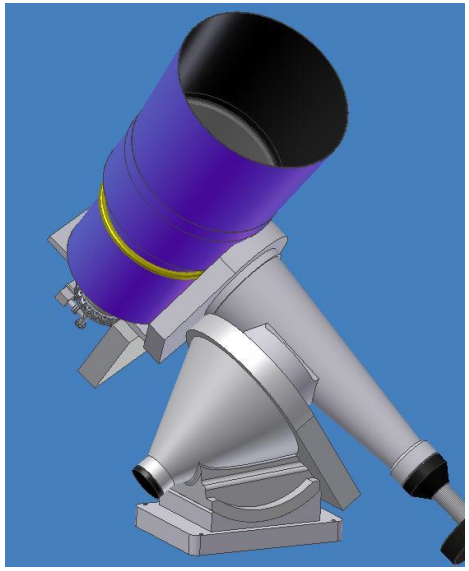
Existing NASA NEO Leadership

- Since 1998, NASA's Near Earth Object Observation (NEOO) Program has led the global effort to find potentially hazardous asteroids
- Within the last 15 years this effort has successfully found 95 percent of the near-Earth asteroids larger than 1km



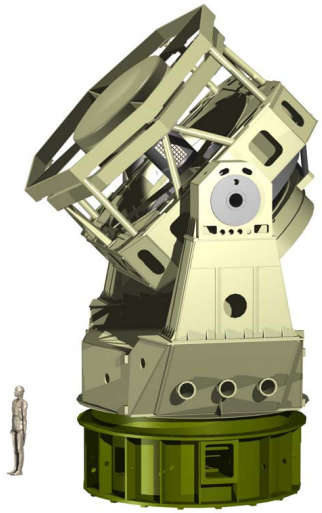
Enhancing Existing Work without the Grand Challenge

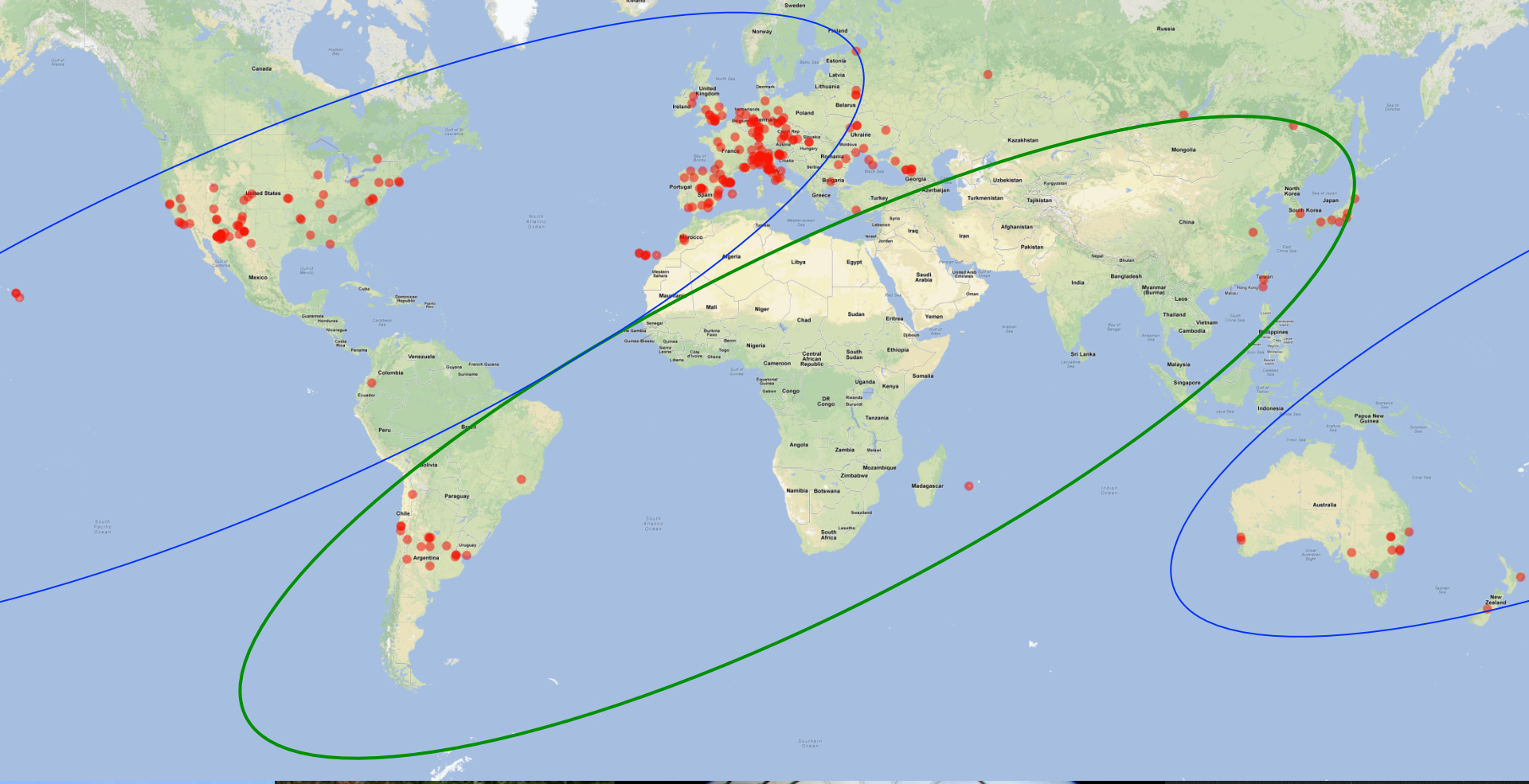
- Improvements in the NASA observing network (Upgraded Catalina Sky Survey scopes, Pan-STARRS 2, ATLAS, Space Surveillance Telescope) will result in a higher discovery rate for all NEO types



ATLAS

SST

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Romania
Bulgaria
Greece
Turkey
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Kazakhstan
Uzbekistan
Turkmenistan
Mongolia
China
North Korea
South Korea
Japan
Afghanistan
Pakistan
Iran
Iraq
Syria
Lebanon
Israel
Jordan
Saudi Arabia
India
Bangladesh
Myanmar (Burma)
Laos
Thailand
Vietnam
Cambodia
Philippines
Taiwan
Sri Lanka
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Chad
Sudan
Eritrea
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Nigeria
Ethiopia
Somalia
Cameroon
Central African Republic
South Sudan
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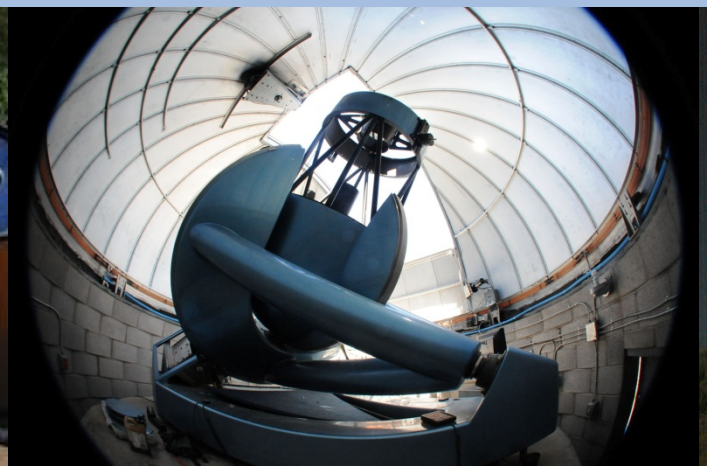

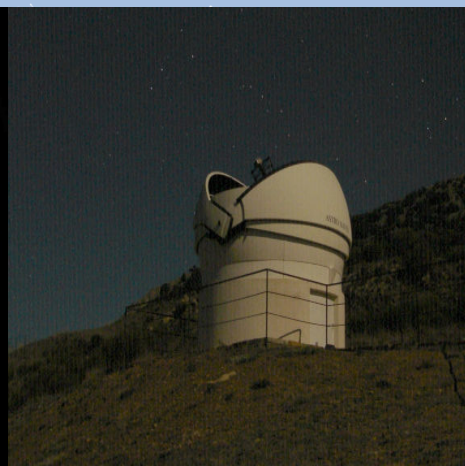

Challenge Statement

Find all asteroid threats to human populations and know what to do about them.

What can YOU do?

- Look
  - Join in the hunt for and characterization of potentially hazardous objects
    - Discover
    - Track
    - Characterize
- Participate
  - SSERVI Monthly Seminar on Near Earth Asteroids
  - Planetary Defense Conference
- Educate
  - Host workshops for professional and citizen scientists
  - Engage IAU OAD emerging Global Partnership

JCM AGC Outcomes

- Intention to Partner on the AGC
  - With Existing Talent and Facilities Increase Observation Priority for Asteroids
- Joint Workshop on NEO Observing
  - Target January 2014
  - NASA+IAU/MPC Hosted Virtual Workshop
- Attend IAWN, February 2014
- Consider emplacement of an Atlas class telescope

Next Steps

- Continued Dialog on Future Collaboration
  - Asteroid Cooperation
    - Faculty Exchange
    - Collaborative Observation Campaigns
  - Space Communications
    - Cooperative Examination of Future Needs
  - Bi-Static Radar Demonstration

Tswaing/Soutpan Meteor Crater